

(21) Application No 0017368.2

(22) Date of Filing 15.07.2000

(71) Applicant(s)  
Far Great Plastics Industrial Co Ltd  
(Incorporated in Taiwan)  
No 855 Chung Shan Road, Kue-Jin Hsiang,  
Tainan Hsien, Taiwan

(72) Inventor(s)  
Ting-Hsing Chen

(74) Agent and/or Address for Service  
Eric Potter Clarkson  
Park View House, 58 The Ropewalk, NOTTINGHAM,  
NG1 5DD, United Kingdom

(51) INT CL<sup>7</sup>  
F16B 7/14 // B62K 15/00

(52) UK CL (Edition T )  
E2A AGKFD A370  
B7E ECF E102 E111

(56) Documents Cited  
None

(58) Field of Search  
UK CL (Edition R ) B7E ECF , E2A AGD AGEA AGG  
AGKFB AGKFD AGMK  
INT CL<sup>7</sup> B62K 15/00 , F16B 7/14  
Online: EPODOC, WPI, PAJ

(54) Abstract Title  
Telescopic tube clamping arrangement

(57) A telescopic tube arrangement (eg for use with a collapsible scooter or the like frame) has outer 1 and inner 2 tubes respectively provided with a slot 11 and a groove 21. A clamp member 3 secured to tube 1 by a member 34 has free ends which can be drawn together by a cam lever device 31 acting via a pin 32 to clamp the tubes against relative axial movement. A guide member 4 mounted on the pin 32 extends through the slot 11 so that a head 41 can engage the groove 21 to prevent relative rotation of the tubes.

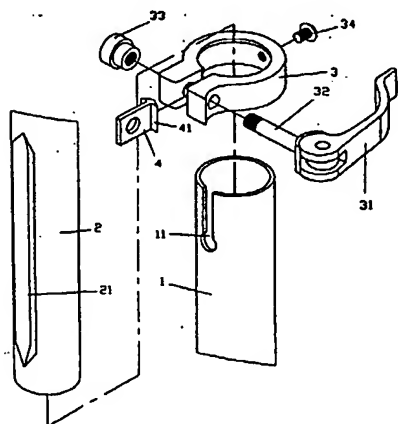


FIG. 1

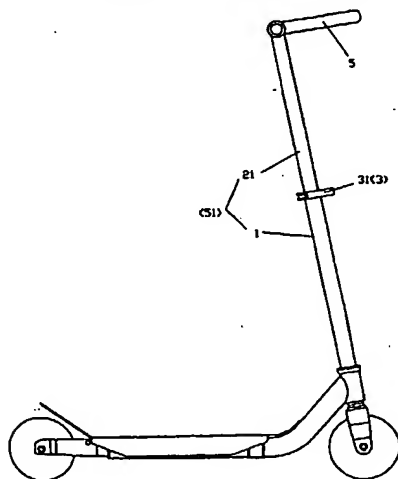


FIG. 2

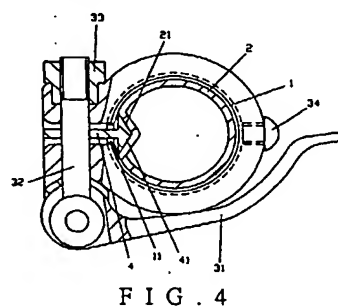


FIG. 4

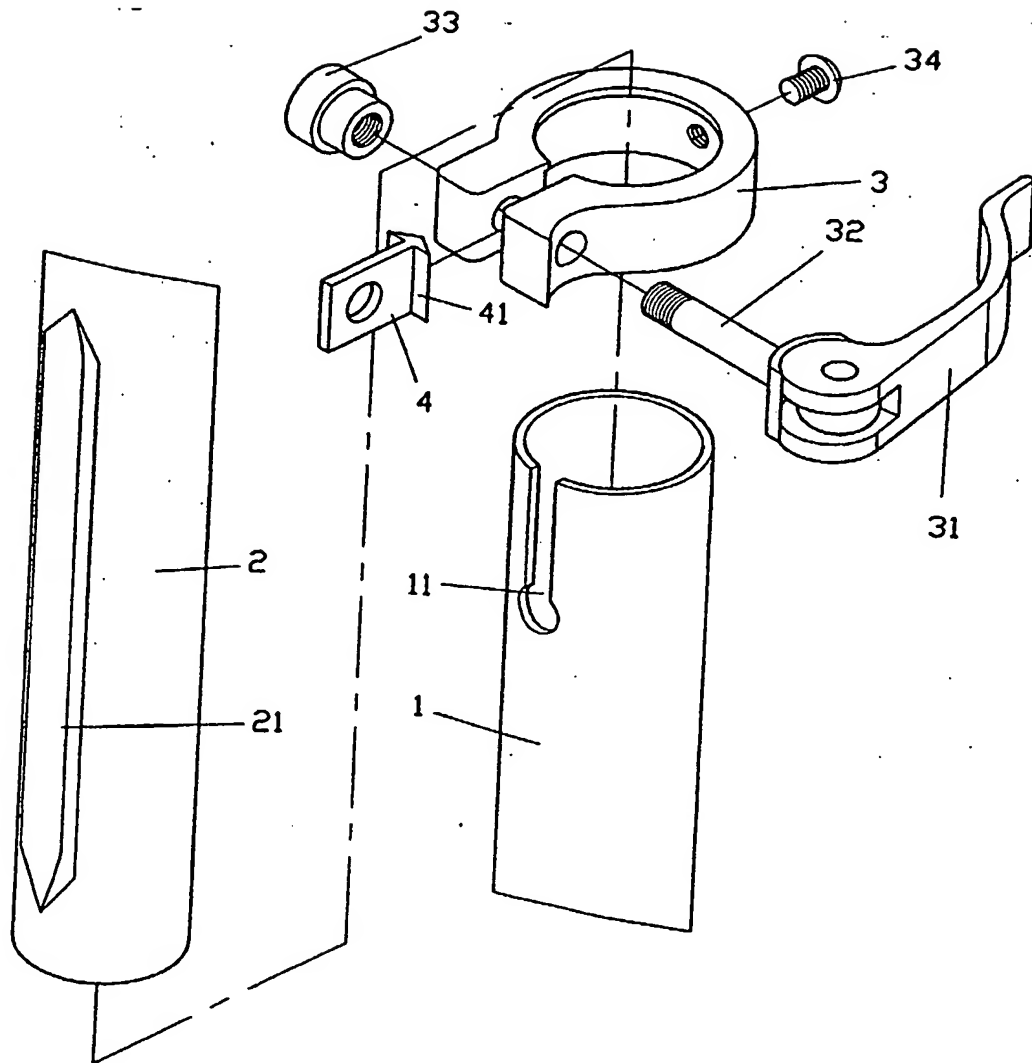


FIG. 1

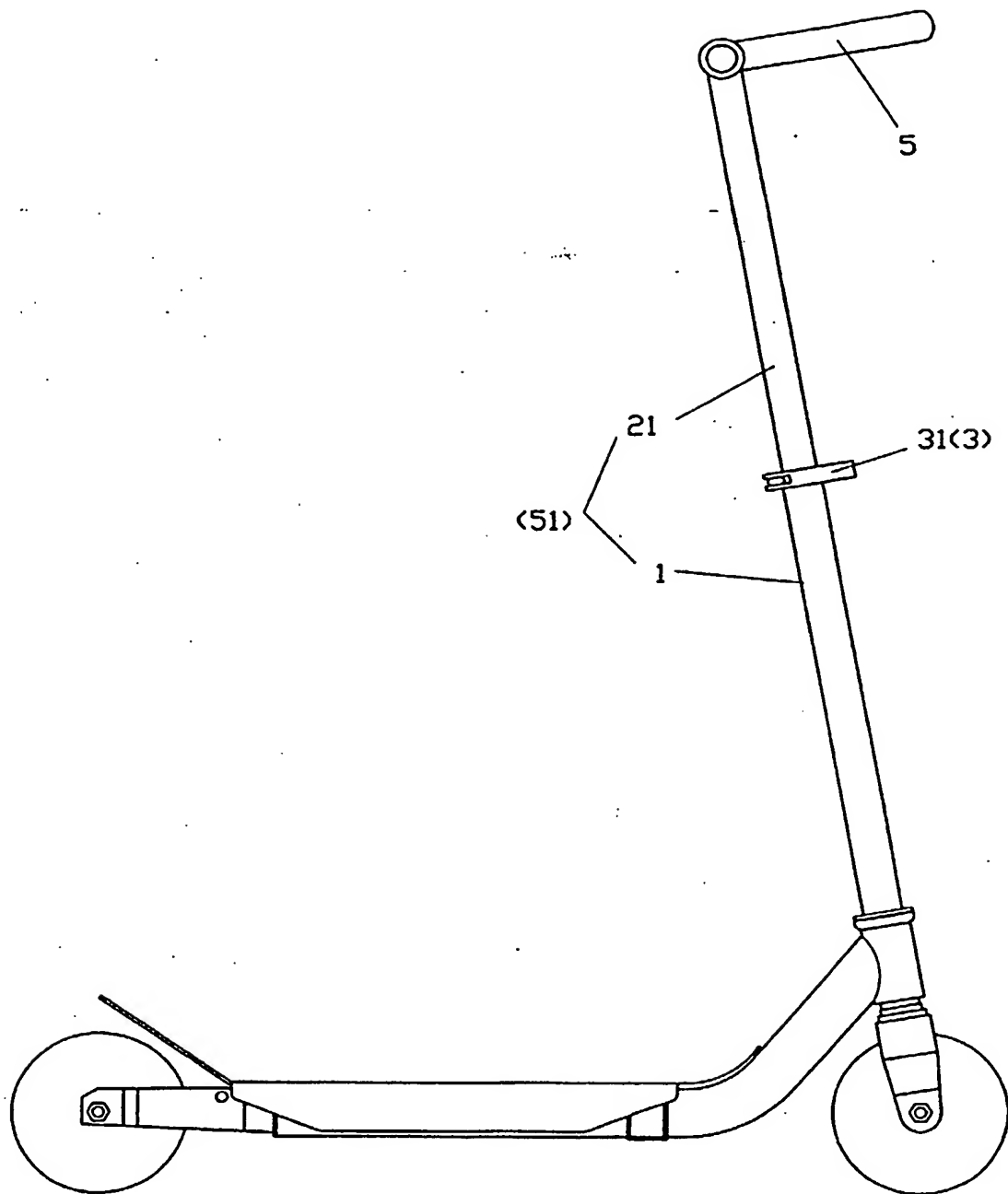


FIG. 2

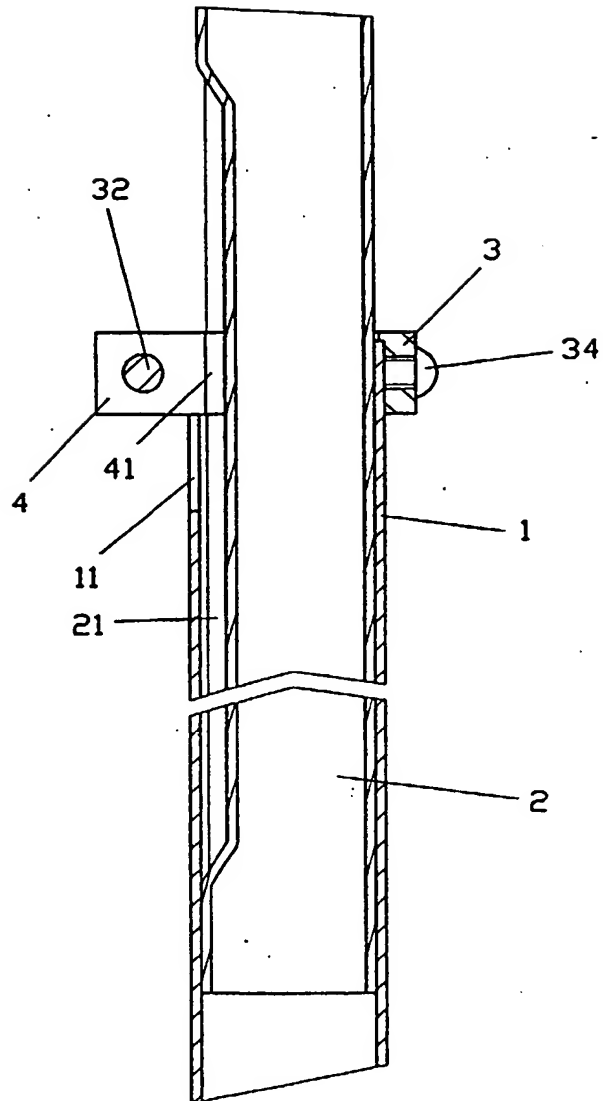


FIG. 3

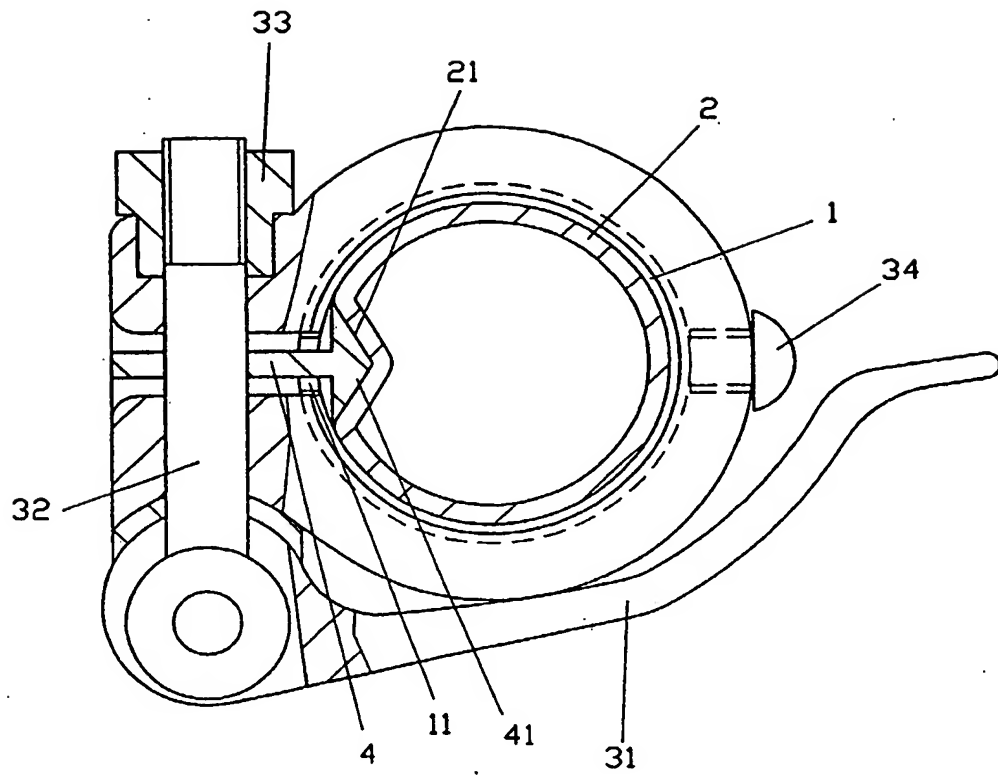


FIG. 4

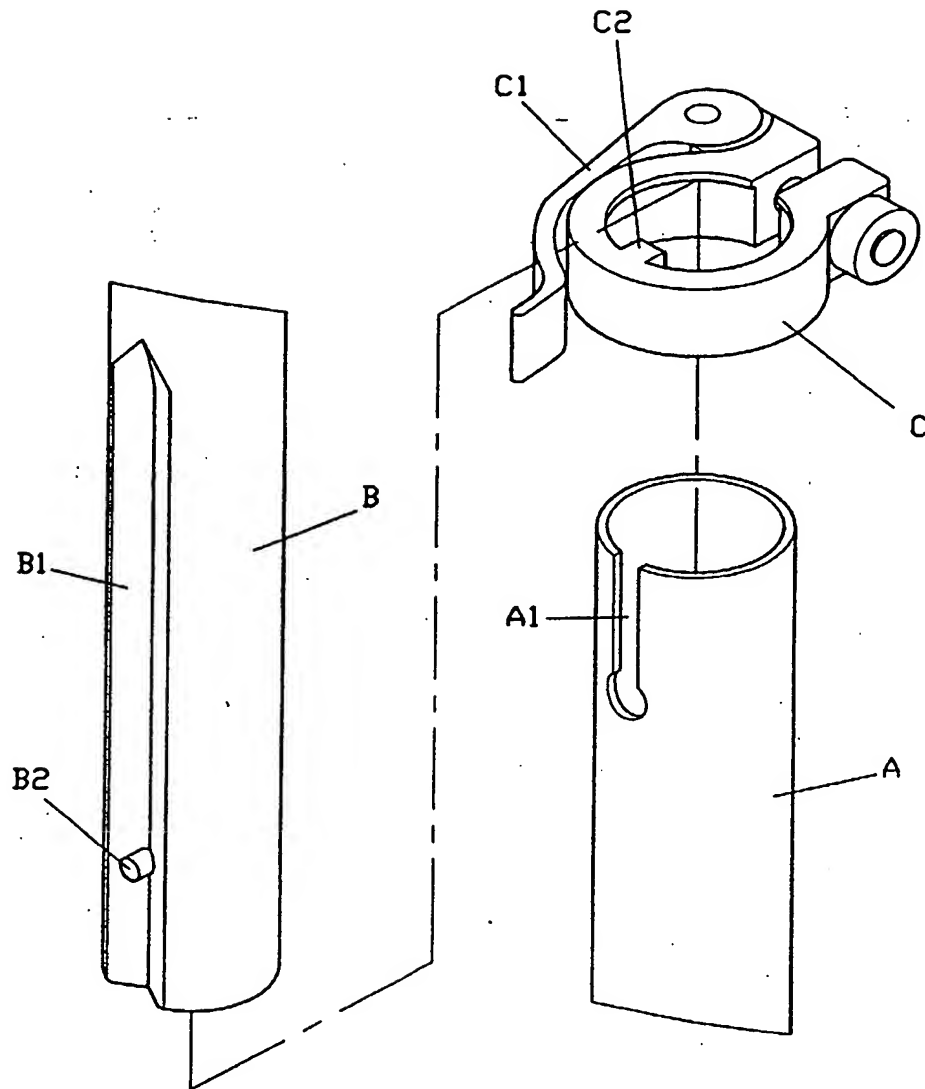


FIG. 5  
(PRIOR ART)

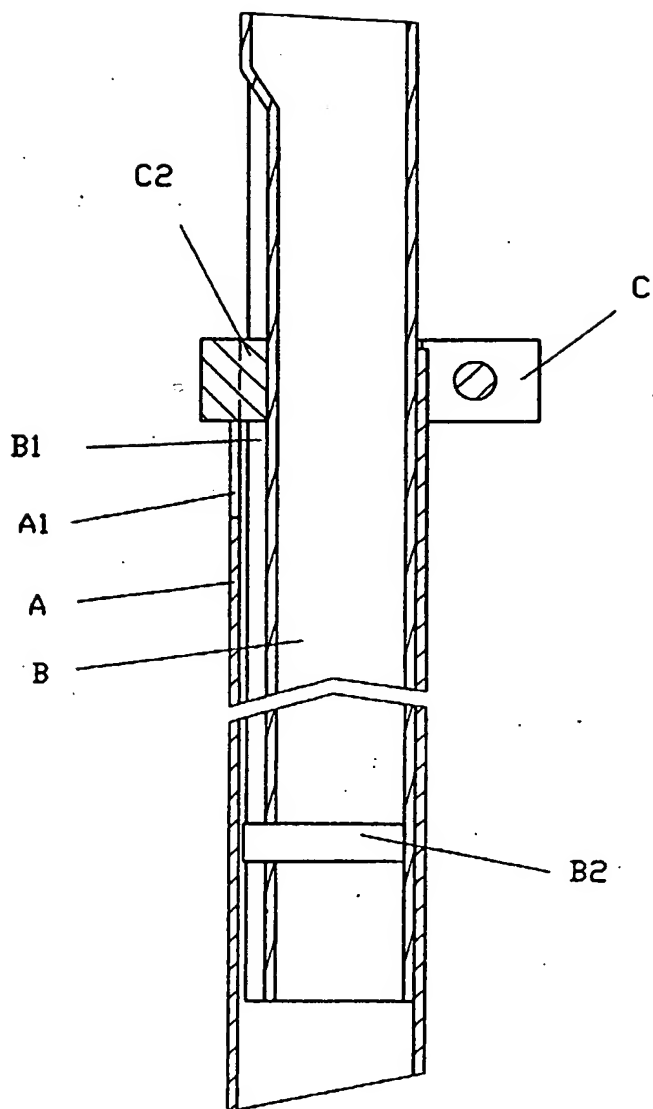


FIG. 6  
(PRIOR ART)

# **A QUICK RELEASE STRUCTURE OF A SCOOTER**

## **BACKGROUND OF THE INVENTION**

### **Field of the Invention**

The present invention relates to a quick release structure of a scooter, more particularly to a quick release for a scooter having an extensible tube that works together with a stopper to adjust the length of the tube and prohibits any unexpected rotation of the tube.

### **Description of the Prior Art**

As we know that the design of many current products occupy quite a lot of volume during their use, it is not only inconvenient for carrying them but also occupies quite a lot of space for storage. Therefore, the extensible structure is popularly used in such products to reduce the volume of such products. Furthermore, the application of extensible structure is common in adjusting the length of tube structures. One of the common products is the popular scooter. The vertical tube of the handle bar incorporates an extensible structure capable of shortening the length of the tube for storage and carrying. And the quick release having a wrench is commonly used for the tube structure of the fixed extensible structure design in order to have a fast and easy operating effect. As shown in Figures 5 and 6, a cut groove A1 is set at the axial tip of the external tube A of the extensible member for receiving a tube C having a quick release wrench C1. In the ringed member of the tube C, it forms a protruding rib C2 responsive to the cut groove A1 and such rib protrudes into the tube. The inner tube B forms a stamping forming V-shaped longitudinal groove B1 at the protruding rib of the internal surface of the tube C



corresponsive to the external surface of the inner tube B. It also sets a pressing column B2 at the lower section of the groove B1. Therefore, the protruding rib C2 will slide along the internal surface of the tube C with the groove B1 of the inner tube B and its pressing restricts any unexpected rotation.

5 Furthermore, it forms a stopping action by pressing the pressing column B2 against the protruding rib C2 of the internal side of the tube C.

In the fixing and positioning of the foregoing extensible tube structure, the protruding rib on the internal surface of the tube ring member has to comply with the molding tools and needs addition forming and processing. The manufacturing of the tube itself is complicate and has a special exterior design and not able to be shared. Since the protruding rib presses against the V-shaped groove and easy to have scratches. In addition, the pressing column at the lower section of the groove on the inner tube has another hole for insertion. The additional work for fixing such pressing column and groove wall costs money and time, and it is not an easy job either.

In view of the shortcomings and inconvenience of the prior art, the inventor of the present invention based on years of experience accumulated from the engagement in the related industry conducted extensive research to resolve the foregoing shortcoming and invented the present invention.

20 Therefore, the primary objective of the present invention is to provide a quick release for the tube of a scooter, and by using a stopper together with a main tube having a quick release wrench at an end of the main tube of the extensible tube member to make the expansion and position adjustment simple and easy and to restrict the inner tube from rotating. Its structure is as follows:

25 The extensible tube of the main tube has a cut groove deposed axially at

the end of the main tube and is coupled to a tube with a quick release having a wrench on it. The tube passes through the open end of the ringed member of the quick release wrench and its coupling to an axle having a straight lump member of a stopper, such straight lump member facing the internal side of the cut groove of the main tube forms a conical stopping member, and connected  
5 internally to an auxiliary tube of the main tube forming a longitudinal groove at the tube surface corresponding to the conical stopping member of the stopper. Such V-shaped stamping formed groove is responsive to the conical stopper, and the way of contact facilitates a smooth sliding movement and also restricts  
10 the inner tube and the outer from rotating.

To make it easier for our examiner to understand the objective of the invention, its structure, innovative features, and its performance, we use a preferred embodiment together with the attached drawings for the detailed description of the invention.

## **BRIEF DESCRIPTION OF THE DRAWINGS**

Other objects, features, and advantages of the invention will become apparent from the following detailed description of the preferred but non-limiting embodiment. The description is made with reference to the  
5 accompanying drawings, in which:

FIG. 1 shows the structure of the present invention.

FIG. 2 shows an embodiment of the present invention that copes with the scooter assembly.

FIG. 3 shows a perspective diagram of the assembly according to an  
10 embodiment of the present invention.

FIG. 4 shows another perspective diagram of the assembly according to an embodiment of the present invention.

FIG. 5 shows the structure of a prior art.

FIG. 6 shows the perspective diagram of the assembly according to a prior art.

## DESCRIPTION OF THE PREFERRED EMBODIMENT

As shown in Figures 1 and 2, a preferred embodiment of the present invention incorporates an extensible tube that is divided into the main tube 1 and the auxiliary tube 2, and a quick release wrench 31 of the tube 3, wherein:

5 Said main tube 1 is coupled to a cut groove 11 at the axial tip of the corresponsive auxiliary tube 2, and also coupled to the tube 3 having the quick release wrench 31;

Said auxiliary tube 2 internally connected to the main tube 1 forms a stamping forming V-shaped groove at the lower section of the tube facing the cut groove 11, and the lower end has a longitudinal groove 21 at a distance  
10 from the tip of the tube;

Said tube 3 passes through the open end of the ringed member of the quick release wrench 31 and its coupling to an axle 32 having a straight lump member of a stopper 4, such straight lump member facing the internal side of the cut groove 11 of the main tube 1 forms a conical stopping member 41. As  
15 the prior art, the quick release wrench 31 is fixed to a fixed latch 34.

By the foregoing structural design, taking the vertical tube 51 of the handle bar 5 of a scooter as an example (as shown in Figure 2), two sections of the vertical tube 51 are the corresponsive main tube 1 and the auxiliary tube 2  
20 that allow the vertical tube 51 to be extensible for the length (height) adjustment; wherein as shown Figures 3 and 4, the tube 3 is coupled to an end of the main tube 1 and screwed to the fixed latch against the wall of the tube for fixing its position, and the quick release wrench 31 coupled to an axle 32 passing through a stopper 4 by a conical stopper 41 protruding into the cut

groove 11. It makes the vertex of the conical stopper 41 presses against the  
corresponsive V-shaped groove 21 of the auxiliary tube 2 internally connected  
to the main tube 1 to restrict the unexpected rotation and facilitates a smooth  
sliding movement. Furthermore, by using the quick release wrench 31, the  
5 tube 3 tightly grips the main tube 1 and latches the corresponding auxiliary tube  
2. When releasing the quick release wrench 31, the tube 3 no longer grips the  
main tube 1, and when the auxiliary tube 2 is extended to its maximum length,  
the conical stopper 41 of the stopping member 4 will press at the tip of the  
groove 21 of the auxiliary tube 2, and stop the auxiliary tube 2 falling out from  
10 the main tube 1.

Therefore, in summation of the above description of a quick release  
structure of a scooter is the research and development subject for enhancement.  
The inventor of the present invention based on years of experience in the  
related industry conducted extensive research to enhance the structure of the  
15 storage rack herein which is hereby submitted for patent application.

While the invention has been described by way of example and in terms  
of a preferred embodiment, it is to be understood that the invention is not  
limited thereto. To the contrary, it is intended to cover various modifications  
and similar arrangements and procedures, and the scope of the appended claims  
20 therefore should be accorded the broadest interpretation so as to encompass all  
such modifications and similar arrangements and procedures.

# **WHAT IS CLAIMED IS:**

A quick release structure for the tubes of a scooter, such quick release for the tube binder of a scooter, and its tubes having a quick release wrench at an end of the main tube of the extensible tube member, a cut groove is  
5       deposed axially at the end of the main tube for passing the tubes through the open end of the ringed member of the quick release wrench and its coupling to an axle having a straight lump member of a stopper, such straight lump member facing the internal side of the cut groove of the main tube forms a conical stopping member, and connected internally to an  
10       auxiliary tube of the main tube forming a longitudinal groove at the tube surface corresponding to the conical stopping member of the stopper. Such V-shaped stamping formed groove is responsive to the conical stopper, and the way of contact facilitates a smooth sliding movement and also restricts the inner tube and the outer from rotating.

15



Application No: GB 0017368.2  
Claims searched: 1

Examiner: Philip Silvie  
Date of search: 6 October 2000

**Patents Act 1977**  
**Search Report under Section 17**

**Databases searched:**

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:  
UK Cl (Ed.R): B7E (ECF); E2A (AGD, AGG, AGEA, AGKFB, AGKFD, AGMK)  
Int Cl (Ed.7): B62K 15/00; F16B 7/14  
Other: Online: EPODOC, WPI, PAJ

**Documents considered to be relevant:**

Category	Identity of document and relevant passage	Relevant to claims
	NONE	

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.